Paper No. 32

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte BARRETT J. ROLLINS,
CHARLES D. STILES, and
GORDON G. WONG

Appeal No. 2001-2394
Application No. 08/437,306

ON BRIEF

Before WILLIAM F. SMITH, SCHEINER, and GRIMES, Administrative Patent Judges.

GRIMES, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 5-8 and 18-35, all of the claims remaining. Claims 5, 18, 25, 28, and 29 are representative and read as follows:

5. An isolated or recombinant DNA comprising a sequence of nucleotide bases the same or essentially the same as SEQ ID NO:1, or a DNA sequence which specifically hybridizes thereto.

18. A recombinant DNA encoding a human JE factor comprising an amino acid sequence from about amino acid #30 to amino acid #99 of Table I, SEQ ID NO: 2, or biologically active fragment or mutation thereof.

25. An isolated or recombinant DNA comprising a sequence of nucleotide bases the same or essentially the same as nucleotide #160 to nucleotide #369 of SEQ ID NO:1.

28. The DNA of Claim 25 wherein the sequence is an allelic variant of the sequence of SEQ ID NO:1.

29. An isolated or recombinant DNA comprising a sequence of nucleotide bases the same or essentially the same as nucleotide #160 to nucleotide #369 of SEQ ID NO: 1 or a fragment thereof, wherein said fragment specifically hybridizes to the complement of SEQ ID NO:1.

The examiner relies on the following reference:

Bowie et al. (Bowie), "Deciphering the Message in Protein Sequences: Tolerance to Amino Acid Substitutions," Science, Vol. 247, pp. 1306-1310 (1990)

Claims 5-8 and 18-35 stand rejected under 35 U.S.C. § 112, second paragraph, as indefinite.

Claims 5-8 and 18-35 stand rejected under 35 U.S.C. § 112, first paragraph, as nonenabled.

We affirm the rejection for indefiniteness and vacate the rejection for nonenablement.

Background

Cytokines are regulatory proteins that deliver signals between different types of cells. Specification, page 1. The specification discloses a "human cytokine . . . termed JE which is elicited in response to platelet-derived growth factor (PDGF)." Id., page 2. "Because JE expression is activated by PDGF, a growth factor released by platelets at the site of a wound, JE protein is likely to be useful directly for treating wounds." Id., page 4.

According to the specification, JE is "characterized by containing the amino acid sequence from amino acid #30 to amino acid #99 as set forth in [the specification's] Table I." Page 5. Table I is shown on page 17 of the specification. According to the specification,

> [a]llelic variants of the DNA sequence of Table I encoding JE factor . . . are also included in the present invention as well as analogs or derivatives thereof. . . . These DNA sequences include those sequences which hybridize under stringent hybridization conditions . . . to the DNA sequence of Table I. . . .
>
> DNA sequences which hybridize to the sequence for JE under relaxed hybridization conditions and which code on expression for JE peptides having JE biological properties also encode novel JE polypeptides. . . .
>
> Similarly, DNA sequences which code for JE polypeptides coded for by the sequence of JE, but which differ in codon sequence due to the degeneracies of the genetic code or allelic variations (naturally-occurring base changes in the species population which may or may not result in an amino acid change) are also encompassed by this invention. Variations in the DNA sequence of JE which are caused by point mutations or by induced modifications to enhance the activity, half-life or production of the polypeptides encoded thereby are also encompassed in the invention.

Id., pages 5-7.

Discussion

The claims are directed to DNA encoding JE and JE variants. All of the claims on appeal read on the DNA sequence of SEQ ID NO:1 and also include other sequences, as follows:

(a) Claim 1 reads on DNAs having a sequence that is "the same or essentially the same as SEQ ID NO:1, or a DNA sequence which specifically hybridizes thereto." Claims 6-8, 25-27, and 29-35 also encompass DNAs that are "essentially the same" as various

subsequences of SEQ ID NO:1 or which encode proteins that are "essentially the same" as SEQ ID NO:2.

(b) Claim 18 reads on DNAs encoding at least a subsequence of SEQ ID NO:2 "or biologically active fragment or mutation thereof." Claims 19-23 also encompass DNAs encoding biologically active fragments and/or mutants of JE.

(c) Claim 24 reads on DNAs encoding "allelic variations" of at least a subsequence of SEQ ID NO:1. Claims 19, 22, and 28 also read on allelic variants of JE.

The examiner rejected all of the claims as indefinite and nonenabled.

1. Definiteness

The examiner rejected the claims under 35 U.S.C. § 112, second paragraph, on the basis that several of the terms used in the claims rendered them vague and indefinite. Among the terms the examiner objected to were

- "essentially the same" ("the metes and bounds of the term are unclear. It is impossible to determine what is included or excluded in this term," Examiner's Answer, page 3);
- "mutation" ("in the absence of a clear definition of the term 'JE factor' in the specification, the metes and bounds of the claims with respect to 'mutation' are unclear," Examiner's Answer, page 3);
- "allelic variation" ("the recitation of this term is incorrect, because an allelic variation is an inherited not a deliberately engineered mutation in a recombinant DNA," Examiner's Answer, page 3); and
- "hybridizes", "specifically hybridizes", and "stringent" ("all relative and conditional terms [that] renders [sic] the claims indefinite," Examiner's Answer, page 4).

The examiner also rejected claims 6 and 7 as being improperly dependent on claim 5, in that claim 5 recites a "DNA", while claims 6 and 7 recite the "DNA sequence of Claim 5."

"The standard of indefiniteness is somewhat high; a claim is not indefinite merely because its scope is not ascertainable from the face of the claims." Amgen, Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1342, 65 USPQ2d 1385, 1406 (Fed. Cir. 2003). Rather, a "claim is indefinite if, when read in light of the specification, it does not reasonably apprise those skilled in the art of the scope of the invention." Id. "The test for definiteness is whether one skilled in the art would understand the bounds of the claim when read in light of the specification." Miles Laboratories Inc. v. Shandon Inc., 997 F.2d 870, 875, 27 USPQ2d 1123, 1126 (Fed. Cir. 1993).

We do not agree that the claims are indefinite because they use the terms "mutation", "allelic variation", "hybridizes", "specifically hybridizes", and "stringent". As pointed out by Appellants, these terms are adequately defined in the specification (see, e.g., page 6 for exemplary stringent and non-stringent hybridization conditions, pages 7-8 for a discussion of JE mutations, and page 7, lines 1-3, for a definition of allelic variations). Thus, these terms would not have prevented those skilled in the art from understanding the scope of the claims. With regard to claims 6 and 7, the examiner has not adequately shown that the difference in claim language ("DNA" versus "DNA sequence") would have prevented those skilled in the art from understanding the scope of the claimed subject matter.

We do, however, agree with the examiner that the term "essentially the same" renders claims 5-8, 25-27, and 29-35 indefinite. "Essentially the same" is a term of degree like "about" or "substantially". Such terms are not per se

indefinite, but "[w]hen a word of degree is used the [fact-finder] must determine whether the patent's specification provides some standard for measuring that degree." Seattle Box Co. v. Indus. Crating & Packaging, Inc., 731 F.2d 818, 826, 221 USPQ 568, 574 (Fed. Cir. 1984).

In this case, claim 5 recites a "DNA comprising a sequence of nucleotide bases the same or essentially the same as SEQ ID NO:1." The specification does not expressly define what degree of similarity is shared by sequences that are "essentially the same." In fact, as far as we can tell, the specification does not use the phrase "essentially the same" at all. The closest comparable phrase seems to be "substantially the same," which is also left undefined. See page 3 ("Another aspect of the invention includes DNA sequences coding on expression for a human JE polypeptide. One such DNA sequence is the same or substantially the same as the approximately 772 nucleotide sequence which appears below in Table I."). Thus, the specification provides no standard to measuring the degree of sequence similarity required by the claim term "essentially the same" and we agree with the examiner that claims 5-8, 25-27, and 29-35 are indefinite on that basis.

Appellants argue that court cases and issued patents support their position that terms like "substantially" and "essentially" are not indefinite. See the Appeal Brief, pages 8-10. Appellants also take issue with the examiner's position, from earlier in prosecution, that sequences could be considered

"substantially" or "essentially" the same if they share at least 51% sequence identity. See the Appeal Brief, page 10:

> The examiner's 51% identity figure would permit the claims to encompass a 49% variation in sequence identity. . . . No reference has been provided which would suggest that a person of skill in the art would interpret the claims in such a manner. The examiner has failed to provide any support for the interpretation. . . . One of ordinary skill in the art would be able to determine whether a nucleic acid sequence is essentially the same as the nucleic acids specified in the claims.

This argument is not persuasive. The examiner's rejection, as set out in the Examiner's Answer, is not based on an interpretation that the claims read on sequences at least 51% identical to the recited sequences. See the Examiner's Answer, page 3. Thus, the reasonableness of that interpretation is not an issue in this appeal and we take no position on it.

The only basis of the rejection in the Examiner's Answer is that the claim term "essentially the same" renders the claims indefinite because "the metes and bounds of the claim are unclear. It is impossible to determine what is included or excluded in this term." Examiner's Answer, page 3. Appellants' argument on that point amounts to "[o]ne of ordinary skill in the art would be able to determine whether a nucleic acid sequence is essentially the same as the nucleic acids specified in the claims." Appellants, however, make no attempt to describe the criteria that would be applied by those skilled in the art in making such a determination.

It is true that terms of degree like "substantially" and "essentially" do not automatically render claims indefinite. However, neither are they per se definite.

When terms of degree are used, "the issue is whether one skilled in the art at that time would have been able to reasonably determine their metes and bounds in the context they are used." Ex parte Anderson, 21 USPQ2d 1241, 1249 (Bd. Pat. App. Int. 1991). Here, as discussed above, the specification provides absolutely no guidelines on what distinguishes a DNA sequence that is "essentially the same" as SEQ ID NO:1 from one that is not. Thus, those of skill in the art cannot, with any confidence, determine what subject matter is and is not within the scope of the claims.

"[A]mbiguity in claim scope is at the heart of the definiteness requirement of 35 U.S.C. § 112, ¶ 2." Amgen, Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1342, 65 USPQ2d 1385, 1406 (Fed. Cir. 2003). A "claim is indefinite if, when read in light of the specification, it does not reasonably apprise those skilled in the art of the scope of the invention." Id. The rejection of claims 5-8, 25-27, and 29-35 under 35 U.S.C. § 112, second paragraph, is affirmed.

2. Enablement

The examiner rejected all of the claims under 35 U.S.C. § 112, first paragraph, "because the specification, while being enabling for an isolated or recombinant nucleic acid encoding the amino acid sequence presented in SEQ ID NO:2 or a nucleic acid which hybridizes to the complement thereof under conditions of 4XSSC at 50°C or hybridization with 30-40% formamide at 42°C[,] does not reasonably provide enablement for . . . a DNA sequence which specifically hybridizes thereto." Examiner's Answer, pages 4-5. The examiner went on to lay out in more detail why the specification is not enabling for DNAs

that ”specifically hybridize” or “hybridize under stringent conditions” to SEQ ID NO:1 (Examiner’s Answer, pages 5-6). The examiner also concluded that various claims were nonenabled because of the recitation of sequences that are “essentially the same” (Examiner’s Answer, pages 7-8), as well as the recitation of mutations (pages 8-10 and 12-13) and fragments (pages 10-12).

Appellants argue that the claims are enabled throughout their scope because no more than routine experimentation would be required to make the claimed sequences and to use them as, among other things, hybridization probes. See the Appeal Brief, pages 14-19.

“[T]o be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without ‘undue experimentation.’” In re Wright, 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993). “When rejecting a claim under the enablement requirement of section 112, the PTO bears an initial burden of setting forth a reasonable explanation as to why it believes that the scope of protection provided by that claim is not adequately enabled by the description of the invention provided in the specification of the application; this includes, of course, providing sufficient reasons for doubting any assertions in the specification as to the scope of enablement. If the PTO meets this burden, the burden then shifts to the applicant to provide suitable proofs indicating that the specification is indeed enabling.” Id. at 1561-62, 27 USPQ2d at 1513.

In this case, we find it impossible to reach the merits of the examiner’s rejection, because we cannot understand the difference between the subject

matter the examiner has indicated to be enabled, and that which she has indicated would require undue experimentation. The examiner indicated that the claims are not enabled for "a DNA sequence which specifically hybridizes" to SEQ ID NO:1 or other nucleic acids encoding SEQ ID NO:2. At the same time, however, the examiner indicated that the claims are enabled for "a nucleic acid which hybridizes to the complement [of a nucleic acid encoding SEQ ID NO:2] under conditions of 4XSSC at 50°C or hybridization with 30-40% formamide at 42°C." Examiner's Answer, pages 4-5. These conditions are described in the specification as "[e]xamples of non-stringent hybridization conditions." See page 6.

Hybridization to a given nucleic acid under stringent conditions requires a higher degree of sequence similarity than does hybridization under non-stringent conditions. Thus, as indicated in the specification, some nucleic acids will hybridize to a given nucleic acid sequence under non-stringent conditions even though they will not hybridize to the same sequence under stringent conditions. See page 6. The reverse is not true – any nucleic acid that hybridizes to a given target under stringent conditions would also be expected to hybridize to the same target under non-stringent conditions. Thus, the sequences that the examiner has rejected as nonenabled (those that hybridize under stringent conditions) would appear to be a subset of the sequences that the examiner has indicated to be enabled (those that hybridize under non-stringent conditions).

Under the circumstances, we believe the most appropriate course is to vacate the nonenablement rejection on appeal and allow the examiner to

reconsider her position on that issue. We note that we are not reversing the rejection; we are simply "undoing" it because we cannot see the distinction the examiner makes between enabled and nonenabled subject matter. See, e.g., Ex parte Zambrano, 58 USPQ2d 1312, 1313-14 (Bd. Pat. App. Int. 2001) ("[W]hen an examiner's rejection is vacated the Board does not take an ultimate position on the correctness of an examiner's rejection. The rejection may or may not be correct.").

Upon return of this case, the examiner should reconsider the basis of the nonenablement rejection in light of facts of the case and the appropriate legal standards. If the examiner concludes that practicing the full scope of some or all of the claims would have required undue experimentation, our decision today does not preclude a new rejection under 35 U.S.C. § 112, first paragraph. If such a rejection is made, however, the examiner should take care to explain why the rejected claims are not enabled throughout their full scope, even if they encompass some enabled subject matter.

In reconsidering the issue of enablement, the examiner should review the Board decision in application 08/228,931 (the parent of the present application). A copy of the earlier opinion is attached.

Summary

We affirm the rejection of claims 5-8, 25-27, and 29-35, because the term "essentially the same" gives the claims an indefinite scope. We vacate the rejection for nonenablement because we cannot follow the logic of the rejection. We also recommend that the examiner revisit the issue of enablement in light of our decision in application 08/228,931.

AFFIRMED-IN-PART, VACATED-IN-PART

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